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RD-27,075/USA

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Shah et al.	Confirmation No.:	4082
Serial No:	09/606,093	Group Art Unit:	2175
Filed:	June 27, 2000	Examiner:	Pardo, Thuy N.
Title:	METHOD AND SYSTEM FOR ENABLING TRAINING OF FIELD SERVICE PERSONNEL AND FIELD SERVICE OF MACHINES		

Commissioner for Patents
Washington, D.C. 20231

RECEIVED
OCT 25 2002
Technology Center 2100

DECLARATION UNDER 37 C.F.R. §1.131

Dear Sir:

We, Rasiklal P. Shah, Richard A. Grothman, Kenneth E. Hahn, Bruce T. Ward, Douglas R. Hofstetter, and Richard L. Frowein, declare:

We are citizens of the U.S.A. and are residents of 8 Windlass Drive, Latham, NY 12110; 360 Captains Ct, Winneconne, WI 54986; 6628 Hollyhock Court, Greendale, WI 53129; W243 N2331 Saddle Brook Drive, Apt 16, Pewaukee, WI 53072; N93 W25489 Tomahawk Drive, Sussex, WI 25489; and 901 Lynnewood Drive, Waukesha, WI 53188, respectively;

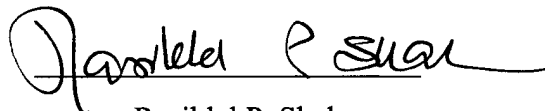
We are joint inventors of the above-identified application, and employees of General Electric (Richard A. Grothman now being retired from General Electric), assignee of the above-identified application;

THAT all of the acts described herein were carried out in the U.S. at General Electric;

THAT, we prepared a 7-page Disclosure Letter Outline dated February 19, 1999, which describes and illustrates the subject invention of the above-identified patent application. A copy of the disclosure document is attached. The disclosure document establishes that the invention for information integration for just-in-time training was conceived at least as early as February 19, 1999.

We further declare that all statements of the foregoing declaration made of our own knowledge are true and that all statements made upon information and belief are believed true and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the above-identified application or any patent issuing thereon.

Signed by me this 17th day of October __, 2002.



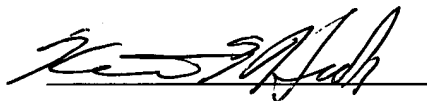
Rasiklal P. Shah

Signed by me this 16 day of October __, 2002.



Richard A. Grothman

Signed by me this 16th day of October ___, 2002.

A handwritten signature in cursive script, appearing to read "Kenneth E. Hahn", written over a horizontal line.

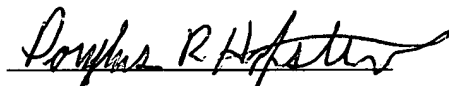
Kenneth E. Hahn

Signed by me this 16th day of October ___, 2002.

A handwritten signature in cursive script, appearing to read "Bruce T. Ward", written over a horizontal line.

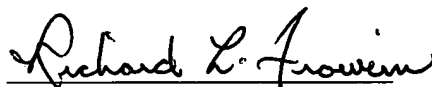
Bruce T. Ward

Signed by me this 16 day of October ___, 2002.

A handwritten signature in cursive script, appearing to read "Douglas R. Hofstetter", written over a horizontal line.

Douglas R. Hofstetter

Signed by me this 16 day of October ___, 2002.

A handwritten signature in cursive script, appearing to read "Richard L. Frowein", written over a horizontal line.

Richard L. Frowein

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DG

Information Integration for Just-In-Need Training Shah, Grothman, Hahn, Ward, Hofstetter, Frowein

DISCLOSURE LETTER OUTLINE

Distribution:

Patent Operation
Original & 2 Copies*
via Lab Manager

Building: ES Room: 501
Date: February 19, 1999

Immediate Manager: Dan Smith
Inventor(s): Rasik Shah (CRD)
Richard Grothman (GEMTS)
Kenneth E. Hahn (GEMTS)
Bruce T. Ward (GEMTS)
Douglas R. Hofstetter (GEMTS)
Richard L. Frowein (GEMTS)

Laboratory Manager of each inventor:

* Daniel P. Smith (CRD); Leon P. Janssen (GEMTS); Kathleen L. Blum (GEMS)

Building: ES Room: 213
SCHENECTADY, NEW YORK

RECEIVED

OCT 25 2002

SUBJECT: PATENT DISCLOSURE LETTER
on: Information Integration for Just-In-Need Training

Technology Center 2100

1. **OBJECT OF INVENTION** (e.g., problem, opportunity, prior art)

In the traditional method of training of field service personnel or of equipment operators, the training material is generally prepared by the equipment designers, and supplemented by the training personnel. The trainees typically spend several weeks in a group at the training site, where the trainers introduce them to a structured set of training modules. The on-site training is supplemented by the remote training material; modern asynchronous remote training methods, such as audio-graphics, are employed to provide a training environment tailored to the need of each trainee, and to provide an opportunity for the "one-on-one" trainee-instructor interactions.

Both the on-site and the remote training approaches face a challenge of information integration and tailoring to needs of individual trainees. These multiple challenges arise due to a variety of factors:

- Bulk of the material is generally created by people (such as design engineers) who are unfamiliar with the field service constraints.
- The training material is structured in a serial fashion.
- There are an unusually large number of information sources which contain relevant information, however, only a small portion of the information contained in individual information sources is of interest to a specific group of trainees. Even for the structured documents (such as using SGML or XML), the elements and their attributes may not be consistent with the needs of the trainee. The legacy documents, which do not use structured authoring, are even less amenable to the quick search for specific content.
- Since the training needs of the group of trainees is diverse and changing with time, any attempts to create a single structured training course material for the entire training class involves many compromises.
- The structure of the training material is highly dependent on the preferences of the instructional designer. It does not lend itself to different teaching styles.

The above limitations can be addressed by the application of resources at the various stages such as authoring, packaging, and delivery of training modules and material, however, the costs and the

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responsibilities associated with them are generally distributed among various organizations and are difficult to influence.

What is needed is an innovative approach which will offer a highly flexible training system by leveraging existing information sources.

2. DESCRIPTION OF INVENTION

The invention described here can best be described with reference to the "Dewey Decimal" system for cataloging the books in a library. The Dewey book classification system attained wide-spread acceptance because it offered these effort-saving features:

Benefits to the readers (i.e. Features):

- It leads the user to his specific area of interest or need with a very low error rate.
- It does not require much training to use the Dewey system.
- It is universally applicable, regardless of language of the books, size of library (i.e. number of books), and the type of books.

Benefits to the librarians (i.e. Enablers):

- The Dewey system has a finite number of categories for classification.
- Each book can be assigned only one and unique classification category.
- Each book in the library has an assigned number which is same on a global scale.
- New book categories can be easily added.

We have termed the proposed system as "Knowledge Integration for Field Effectiveness (KNIFE)". The KNIFE system incorporates all of the above features and enablers, and provides further extensions to meet following unique needs associated with the training environment:

- The classification system can be used to tailor the information to the needs of a trainee ("User profile"). Some example elements of an User Profile are:
 - Modality / Model (e.g. CT LightSpeed, MR Signa 8.5, etc.)
 - Skill Level (e.g.: Novice, Occasional User, Expert)
 - Service Type (e.g. Installation., Hard-down Service call, PM)
 - User Type (e.g. Company service engineer, customer service engineer, customer operator)
 - Information Access Privileges (e.g. Information Class A, B, C, M, etc.)
- The classification system should allow access to a finer information granularity (e.g. chapter, paragraph, diagram, part list, etc.), so the user gets only the specific information segment to meet his needs.
- The system will generate search results even if the user profile is incomplete.

The present invention consists of two elements to achieve the **Features, Enablers**, and **Extensions** outlined above: (a) a Classification Level system, and (b) a Deployment Scheme (architecture). These novel elements are described below.

Classification Level system:

The Classification Level scheme will be applied to each information source type, so that the Deployment Scheme can identify those information sources uniquely suited to the user profile, and display them as needed. Note that the each entry in the User Profile is covered by at least one Classification Level, thus, any revisions to the User Profile will require corresponding changes in the Classification Level system.

There are *application rules* associated with the top-level system, and with each Classification Level.

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Top-Level Application Rules:

Rule 1: Classification Levels are hierarchical; each level denotes severity or criticality of the information source in a descending order. For example, higher level (e.g. Level 2) Information Source can not be accessed unless the User is permitted to access the same Information Source at the lower level (e.g. Level 1).

Rule 2: Each information source is assigned a classification level appropriate to the items in the User Profile.

Level 1: This level governs "access privileges", "Modality / Model", and "User type" specified in the User Profile. The "information source" is any type of information which will add value to the training goals. Each information source is assigned only one access privilege, but can have more than one modality/model. For example,

<u>Information Source</u>	<u>Class A</u>	<u>Class B</u>	<u>Class C</u>	<u>Class M</u>
32wxyz	X			
abrrrt		X		
rtccad				X

<u>Information Source</u>	<u>CT LightSpeed</u>	<u>MR Signa8.5</u>
32wxyz	X	
abrrrt	X	X
rtccad		X

Level 1 Application Rules:

Rule 1: The "User Type" specified in the User Profile is mapped with the categories of "Access Privileges". For example, a Company Customer Engineer has Class M access privilege.

Rule 2: An user with Class M privilege is allowed to access Class A, B, and C items also.

Rule 3: The default category for the User is "Class A" access.

Level 2: This level governs "service type" specified in the User Profile. Each information source can have more than one Service Type categories. For example,

<u>Information Source</u>	<u>Installation</u>	<u>Hard Down</u>	<u>PM</u>
32wxyz_Chap1	X		
abrrt_Fig8		X	X
rtccad_Table4	X	X	
rtccad_Chap3	X	X	X

Level 2 Application Rules:

Rule 1: The default category for the Service Type is "Hard Down" Service Call.

Level 3: This level governs "skill level" specified in the User Profile. Each information source can have only one skill level category. For example,

<u>Information Source</u>	<u>Novice</u>	<u>Occasional User</u>	<u>Expert</u>
32wxyz_Chap1_Section 1.5			X
32wxyz_Chap1	X		

Level 3 Application Rules:

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Rule 1: The default category for the Service Type is "Occasional User"

Deployment Scheme (architecture):

The deployment scheme, shown in Figure below, provides a mechanism for implementing the concepts covered by the invention. The software will be deployed on a computer system used for the training purposes. Various blocks of the Figure are explained below:

User Profile: The user will build his profile by choosing from the menu of the choices for each of the elements of the User Profile, as described earlier; this profile will govern the type and the quantity of the information sources selected for the User. The initial profile can be changed by the user to get a different set of selected sources.

Access Privilege Data Base: Contains company's information on employees and customers to check against the User Profile data provided by the user.

Service Information Source Classification Levels database: This database contains the results of the Classification Level scheme applied against all of the information sources used for training.

Identify User-specific "Titles": This step first combines User Profile with the Access Privilege database to authenticate the user privileges. Then, the Classification Level Application Rules are applied against the User Profile to identify the information Sources which fit the Profile. Titles (or brief descriptors) of these information sources are collected and organized for display.

Display Titles: The Information source titles from the previous step are displayed on the user's computer such that the user can quickly determine whether the results are responsive to his needs.

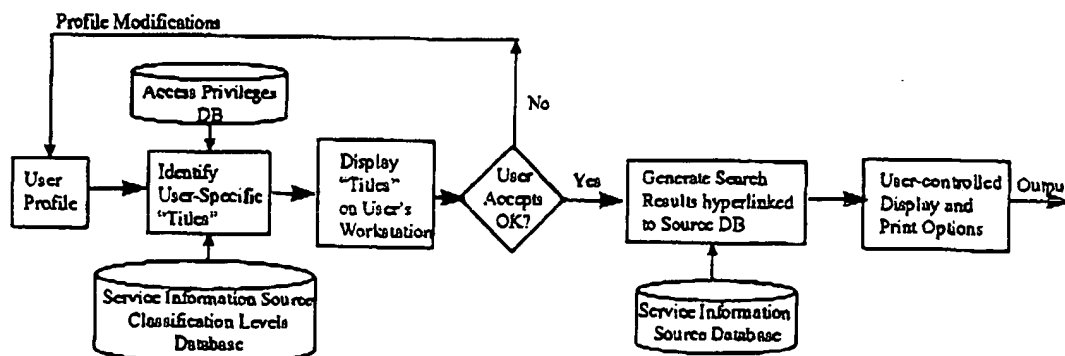
User Accepts OK? This step allows the user to further refine or modify the user Profile parameters to get the search results most suited to his needs.

Service Information Source Database: This database contains the complete information sources.

Generate Search Results: This step established hyperlinks between the titles and their respective titles.

User Controlled Display: Once the user is satisfied with the titles, he can click on any specific title, and the contents of the associated information source will be displayed on his computer, or sent to a printer.

KNIFE : Architecture



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3. OTHER INFORMATION (e.g., test data, reduction to practice, planned use)

It is planned to prove out the above invention in a pilot application for a specific training course.

4. RECORDS

Except for the hand-written notes of the invention prepared by the first inventor, no other record exists.

5. WITNESSES AND DATE

READ AND UNDERSTOOD BY:

WITNESS: 
Signature

Date: 3/8/99

READ AND UNDERSTOOD BY:


GARY S KAUTZER
WITNESS: 
Signature

Date: 4 March 1999

Training

*INVENTOR:

Signature



Type Inventor's Name
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Date: March 4, 1999

*INVENTOR:

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Type Inventor's Name
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Laboratory or Program
GEMS Services Technical

Date: March 4, 1999

Information Integration for Just-In-Need Training Shah, Grothman, Hahn, Ward, Hofstetter, Frowein

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Signature

Richard L. Frowein

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Laboratory or Program

Global Service Technology

Solutions

Date *3/4/99*

*When the invention is joint, all inventors should sign and date the disclosure letter.

(Complete and attach an Invention Disclosure Statement, Form RD-506A, for each inventor.)